

Dr. Schimke's brushes



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The Bulfinch Building at the Massachusetts General Hospital, built in 1911. This is a photo of the back of the MGH chair, designed in 1964 as a gift for Hibbard Williams, M.D., chief resident in Medicine, presented to him by his outgoing assistant residents.



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When I first knew Bob Schimke, he would bound up the stone steps of the old Bulfinch Building, two at a time. We were both house officers at the Massachusetts General Hospital (MGH) in the late 1950s. In that heady company, Bob—fresh from Stanford undergraduate (Phi Beta Kappa) and Stanford medical (Alpha Omega Alpha)—was clearly a star. Whatever he did, he doubtless would have a first-class career. We later went on our own

paths, which did not cross.

Now, almost half a century later, we were about to meet again. Although prepared for the encounter, I was still somewhat apprehensive. My wife, Janet, and I turned into the driveway and Bob was waiting for us. He stuck out his right hand, and said, “Welcome to Palo Alto. I can’t wait to show you my paintings.” He did not get up from his electric wheelchair.

Robert T. Schimke was born in Spokane, Washington, in 1932, his father a dentist and his mother a pianist and piano teacher. Bob enjoyed exploring the woods and making things with his hands, but it was quite clear that he was bright—very bright. Also unconventional—in fact, quite a handful. “In school, I was a holy terror,” he said rather proudly, “and my mother was called to the principal’s office on several occasions.” Bob was thrown out of class at least once. Yet he could do a week’s work in math (particularly geometry) in just an hour—if he wanted to! Bob also started painting in oils and watercolors and was good enough that at least one teacher said that he could consider becoming an artist.

But Bob was headed for college, and entered Stanford on full scholarship. He did not find the Stanford of that day challenging or stimulating. He married as a sophomore and graduated in three years. Perhaps influenced by his parents, Bob entered Stanford’s medical school. At that time, he had no exposure to research as a means of asking or answering



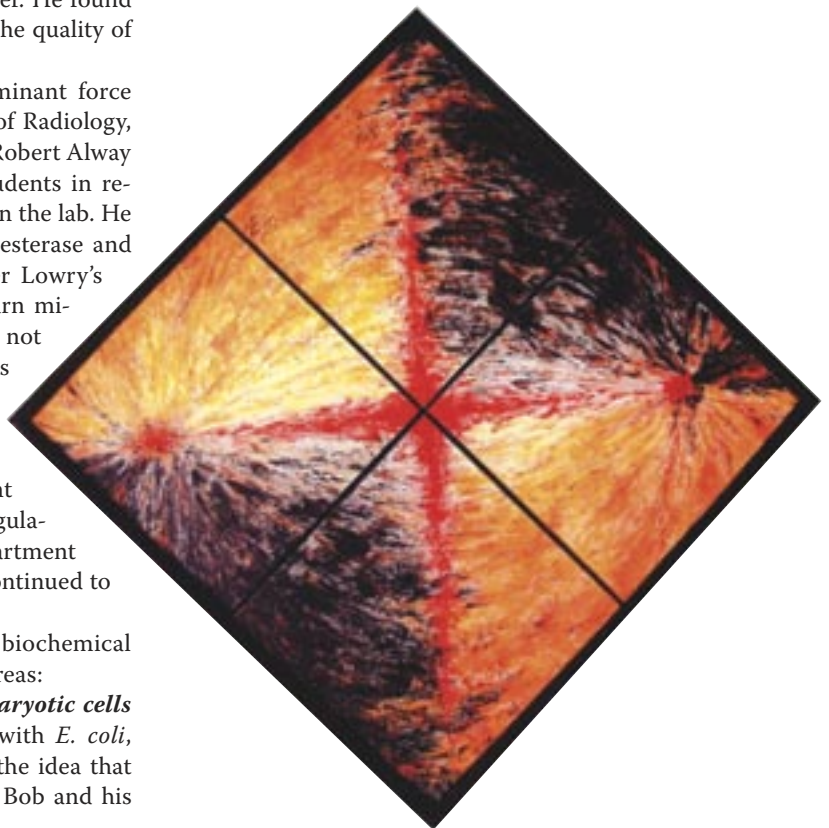
questions, much less as a way of life or as a career. He found premedical subjects interesting, but he felt that the quality of some of the teaching was below par.

Nonetheless, Stanford was changing. A dominant force in the medical school was Henry Kaplan, chair of Radiology, famous for his work on Hodgkin's disease. Dean Robert Alway and Kaplan wanted to interest bright young students in research, and asked Bob to take a year off to work in the lab. He worked under Avram Goldstein on acetylcholinesterase and narcotic receptors. Bob later was sent to Oliver Lowry's lab at Washington University in St. Louis to learn microchemical techniques, and quickly found that not only was research actually fun, but that he was good at it!

After two years at the MGH, Bob spent six more at the National Institutes of Health in the laboratory of Herb Tabor as an independent investigator. Here he did seminal work on the regulation of protein turnover. He returned to the Department of Pharmacology at Stanford, where his career continued to flourish.

Bob Schimke's pioneering contributions to biochemical and molecular cell biology are in four different areas:

1. ***The discovery of protein turnover in eukaryotic cells as a regulated process.*** Based on his studies with *E. coli*, Nobel laureate Jacques Monod had discounted the idea that intracellular proteins turned over. In the 1960s, Bob and his



colleagues showed that proteins in eukaryotic cells are both synthesized and degraded, and that these processes are regulated by both genetic and environmental factors. These findings revolutionized cell biology, and led to the opening of the field of protein turnover. The regulation of protein degradation was a particularly novel concept at the time.

2. **Hormonal control of gene regulation.** In the 1970s, Bob showed that specific gene functions could be controlled by steroid hormones. This was shown first with glucocorticoids and tryptophan pyrrolase in rat liver, and later with estrogen in the chick oviduct. In the latter case, estrogen causes an increase in the function of the ovalbumin gene, leading to higher mRNA levels and greater ovalbumin synthesis.

3. **The discovery of gene amplification in 1977** was another revolutionary breakthrough. Bob showed that the mammalian genome could undergo rapid change when he discovered gene amplification as a mechanism for the development of resistance to methotrexate. This was first demonstrated in cultured cells, and later was found in clinical resistance to the drug in humans. For this discovery, Bob received the Alfred P. Sloan award from the General Motors Cancer Research Foundation in 1985.

4. **The analysis of cell cycle events and their relation to apoptosis.** More recently, Bob studied cell cycle events and their relationship to apoptosis. He linked this work with the studies on gene amplification, showing that the control of events at mitosis are critical for the determination of gene amplification.

Bob may be proudest of his work (with Fred Alt and others) in gene amplification, but it is important to note that by then, 1976, he had already been elected to the National Academy of Sciences at the early age of 43. Stanford also recognized his achievements, and he became chair of Pharmacology. He has also served as president of the American Society for Biochemistry and Molecular Biology.

The *flavor* of Bob's scientific style can be inferred by some of the descriptors used by his colleagues and students:

- A visionary—he knew what would be important and what wouldn't
- Enthusiastic—he could get the students excited about any subject
- A pusher, a no-nonsense person
- Liked to think “out of the box,” unconventional
- Easily bored, and often impatient
- Frank.

Bob attracted a large flock of graduate students, postdoctoral fellows, and sabbatical faculty. Several years ago, at a *festschrift* for him, almost 100 of his former students attended. He was a popular teacher, mentor, and leader, although some of the characteristics that excited students also explain why not everyone is a Bob Schimke fan.



Art and science synergism

Where did art stand in all of this? Bob seesawed between his two muses. Because he immersed himself in his activities, Bob did either science or art. After his third wife died suddenly of a ruptured aneurysm, Bob took a sabbatical in London, where he worked on some rather conventional landscapes, but less science. Art then became eclipsed by the excitement of the gene amplification research. In 1986, Bob turned again to art, working with toys and *objets trouvées* in interesting patterns.

In 1989, Bob married Patricia Jones, an immunologist, and once again concentrated on research, this time in the complexities of the mechanisms of carcinogenesis and cell cycle regulation.



The Terrible Accident

On February 25, 1995, a sunny California day, Bob was bicycling in Palo Alto (“going too fast, of course”) when a car struck him. (“Bob, I have to ask—were you wearing a helmet?” “It was smashed into pieces.”) He was rushed to the Stanford emergency room and was unconscious and delirious for a week. Everyone thought that both of his careers, art and science, were ended—if indeed he survived. Bob was moved to the Palo Alto Veterans Administration Hospital's outstanding spine trauma unit. He was unable to move anything below his shoulders and was forbidden to move anything above them. His quadriplegia was determined to arise from a sideways slippage of the vertebral column, but no fracture was found and no surgery was indicated. He was in a “halo” head and neck brace for three months, and after three more months came home to his best friend and nurse, Pat. He had nightmares about death. Progress was very slow, and was measured in very small increments. It was an important day when, two weeks after the accident, he could move his big toe.

Bob soon realized that “my accident was simply another challenge for me.” He pursued rehabilitation with dogged intensity for many hours each day, noting each little advance with satisfaction, as well as with frustration at not having achieved it *faster*. One of his goals was to be able to walk. While he reached this objective, thanks to a great deal of perseverance, physical assistance (leg braces and a walker), and encouragement from his care attendant, it was so exhausting that he decided to rely on his electric wheelchair. Fortunately, the Schimke house was all on one level and little remodeling

was necessary. Bob eventually could move his arms from the shoulder, his hands less well. At first, pastel pencils were attached to his hands with rubber bands. He was later able to hold a paintbrush, and, although he had considered himself right-handed, he realized that he always had been somewhat ambidextrous. Today he often prefers to use his left hand. In 2002, eight years after becoming a quadriplegic, he returned to art.



His home: gallery and studio

On our arrival, we found that Bob had reinvented himself, this time as a nonrepresentational painter. The house is full of his pictures. His garage in the back is a messy studio where he does most of his painting, sitting at a table with the canvas flat in front of him. Next door is a large room that is his “gallery”; paintings are everywhere—leaning against walls and suspended from ceiling beams. Some have flowers, most are abstract. Always the experimenter, Bob had first tried pastels but discarded them as too tame. The new Bob Schimke wants color—lots of it, although he is also intrigued by the challenge of simple black and white. Bob has taught himself a variety of techniques: oils, tempera, and oil *and* water. He builds up three-dimensional canvases. He again uses *objets trouvées* and mixed media. He is not afraid to crumple up a fabric, attach it to the canvas, spray-fix it with plastic and paint it. Sometimes he runs his wheelchair wheels through paint and then onto the canvas to see what happens. The results are brilliantly alive—sometimes perhaps rambunctious.

It is not surprising that Bob brings to his new vocation all the characteristics that had been his forte as a biological scientist. Some of the canvasses are very large, and for them he enlists the aid of Alex Santos, his caretaker and rehabilitation assistant, and Antonio Landaverde, his handyman and general factotum, directing them what pigments or materials to place where. Bob has done large drip paintings, à la Jackson Pollock, and very successful ones at that. While Pollock painted to Louis Armstrong’s music, Bob prefers ABBA and other groups from the 1970s.

There has been much said and written about the two brains—right and left. Oversimplification puts analytic and linguistic abilities on the left, with spatio-temporal appreciation and integration on the right. If so, Bob must have both sides active in their own rights. But are there connections between the two Bobs—the scientific and the artistic? What one first sees in his art is the same energy he put into his science: he says that he works at his art four or five hours a day, or the day is a disappointment. The same love of unconventionality—he has almost no training in art—and the same delight in the project at hand are there. Furthermore, one sees an ability to discover and display an ordered complexity in the

paintings, an ability that Bob must also have had to express in his ideas about how genes and molecules work within the cell. He seems to have a sense of design, not in the seventeenth-century meaning, but in being able to organize a wide range of various movements, forces, and colors to operate together in a complex and fascinating whole, one with a formal beauty. There is, after all, general agreement that the basic truths of science are indeed formally beautiful. Just ask any mathematician or physicist. Perhaps this is all related to Bob’s gift for geometry. Aren’t many of his abstract paintings exuberant exercises in applied and colorful geometry?

Bob Schimke has very definite ideas about art, just as he did and still does about science. He is convinced that anyone can be an artist. People need to have art around them. No one, says Bob, needs it more than people in hospitals, nursing homes, and places of work. These venues need creativity on the walls and in the halls. And, carrying the concept further, who should be making this art but the staff, the professionals who work there, and especially the patients? Here is an untapped fountain of art, which should be encouraged, displayed, and rotated.

Janet and I had a wonderful day with Bob and Pat. We felt energized, and we learned more about the untapped human potentials to be uncovered even in settings of apparent adversity.

Why had we come? In part, because I had heard about Bob’s life from Dr. Irwin Arias, a colleague of many years’ standing, in part because the photographs Bob had sent me of his paintings were intriguing, in part because I knew something about and was interested in the interactions of disability with artistic expression, and perhaps partly out of survivor guilt. We were of the same generation and, although I had not achieved the scientific distinction that Bob had, neither had I gone through his travails.

In the end, it may not be surprising to find that Bob Schimke feels that he is a lucky man: lucky to be alive in the first place and with his intellectual faculties intact, lucky to be married to Pat, a perfect companion, and lucky to have his art.

Acknowledgments

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